

peer reviewed **CASE REPORT**

CT guided percutaneous drainage of appendix abscess

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This case report is of a female patient in her mid-twenties who presented with abdominal pain and fever. A differential diagnosis of an appendix abscess was confirmed by computed tomography (CT) scan of the abdomen and pelvis. The role of CT guided percutaneous drainage of her appendix abscess is discussed as well as her management and treatment.

Keywords

appendicitis, appendectomy

Case report

A female patient, in her mid-20s, presented with abdominal pain to her general practitioner; she was treated for gastroenteritis. She completed a course of antibiotics. However, her symptoms persisted and two weeks later she was examined by a medical practitioner at a local trauma unit. Her clinical symptoms now included fever. She was referred to a surgeon. On clinical examination a mass in the region of the right iliac fossa was noted as well as tenderness and guarding. In view of these signs the differential diagnosis included appendicitis. Blood tests, abdominal radiographs, and an ultrasound of the abdomen, were requested. The latter confirmed a mass in the right iliac fossa. A CT abdomen was requested. The enhanced CT scan revealed a thick walled fluid collection which contained gas lucencies in the right iliac fossa in keeping with an appendix abscess (see Figure 1). The fluid was loculated. A left

ovarian cyst, and mesenteric lymphadenopathy^[1], were noted (see Figure 2). Due to the inflammatory changes noted on the CT scan the associated complications of perforation of the bowels ruled out surgical appendectomy. She therefore underwent a CT guided percutaneous drainage of the fluid the next day.

Helical images were performed through the area of interest. The mass was visualised, and measurements of its exact location in depth and direction were measured using a grid (see Figure 3). The demonstrated appendix abscess was drained under CT guidance using an aseptic technique. An 8 French nephrostomy catheter was placed in situ. Placement of this catheter was verified by using Smartstep (see Figure 4). This is an interventional CT technique that uses intermittent x-ray exposures of the chosen slice of the scan (on which the measurement was made), as well as the slice above and below.^[2]

Discussion

Acute appendicitis is one of the most common surgical emergencies worldwide. In most cases some kind of radiographic imaging is necessary to aid in diagnosis. CT proves to be the preferred tool, especially in patients with complicated appendicitis, such as rupture with abscess, as was the case with this patient.^[3]

The appendix is anatomically attached to the posterior aspect of the cecum. It has its own mesentery called the meso-appendix, which helps distinguish it from the cecum.^[3] Acute appendicitis begins when the appendiceal lumen becomes blocked. Some of the common causes of appendicular obstruction are thickened mucous, faeces or calculus, that harden and this hardened structure is called an appendicolith.^[3] Blockage by the appendicolith leads to build up of secretions, resulting in a rise in intraluminal pressure. This rise in pressure causes inflammatory changes.^[3]



Figure 1. An axial CT image of the thick walled fluid collection in the right iliac fossa, in keeping with an appendix abscess.



Figure 2. An axial CT image through the lower abdomen, indicating a left ovarian cyst.

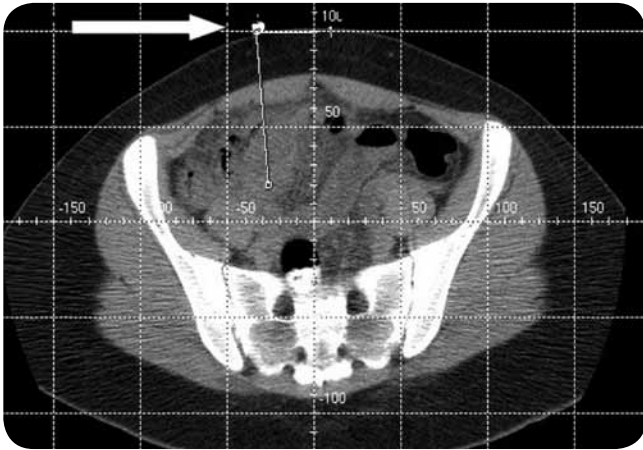


Figure 3. An axial CT image through the abdomen showing measurements taken before catheter placement.



Figure 4. An axial CT image taken of correct placement of an 8 French nephrostomy catheter.

A ruptured appendix must be treated as an emergency, as it is a life threatening condition. A ruptured appendix can form an abscess, which is a key indicator of appendicitis. This can be seen radiologically, as was indicated in the CT scan of this patient.

Common symptoms of appendicitis include abdominal pain in the right lower quadrant, followed by nausea and/or vomiting, and tenderness over McBurney's point.^[3] This patient presented with similar symptoms of abdominal pain. Tenderness and guarding were noted during the ultrasound examination.

The diagnostic tests used to indicate appendicitis include acute abdominal x-rays, blood tests, ultrasound, barium enema and CT.^[3] Due to the advancement of helical multidetector row CT, ultra-thin slice imaging is possible which ensures that CT imaging has become the gold standard for evaluation of acute appendicitis.^[3]

Intravenous contrast agent is highly recommended to eliminate other pathology if appendicitis is not the correct diagnosis. It is also essential in enhancing an abscess and enhancement of the bowel wall and mesentery.^[3] There are many indications that are obtained from CT scans that confirm acute appendicitis. Some include fat stranding within the mesentery (although the differential diagnosis is still wide), a dilated fluid filled appendix, periappendiceal inflammation, abscess, phlegmon, free fluid or free gas bubbles.^[3] One of

the main indications of appendicitis is a swollen appendix, which is fluid filled. The most common treatment for acute appendicitis includes: surgical removal of the appendix; antibiotics; or placement of a drainage catheter when rupture of the appendix causes an abscess.^[3]

Immediate appendectomy would normally be the treatment of choice in patients with uncomplicated acute appendicitis. However, CT guided percutaneous drainage is an effective treatment for patients with complications such as an abscess.^[4] This procedure controls the initial inflammatory process and can be followed by elective interval appendectomy.^[4] There is a risk that a minority (10-25%) may not respond to percutaneous drainage, resulting in repeated procedures, prolonged hospitalisation or multiple follow up CT scans.^[4]

Technical success is defined as a complete resolution of an abscess, determined by a follow up CT as well as negligible catheter output.^[4] A failed procedure is noted if catheter placement has been unsuccessful, no fluid was drained after successful placement, or if follow up imaging more than one day after placement shows enlargement of the abscess.^[4]

A technical and clinical success rate of 90% was reported for 52 CT guided procedures that were conducted.^[4] These results showed that percutaneous drainage is effective and safe in the treatment of patients with acute appendicitis complicated by

perforation and abscess.^[4] CT guided percutaneous drainage of appendix abscess is only successful in the short term; removal of the appendix is essential for long term success. This patient's abscess resolved and she underwent an appendectomy four weeks after removal of the drain.

Conclusion

CT is the preferred standard imaging method, because of its reliability in visualising the appendix.^[3] CT guided percutaneous drainage of acute appendicitis has been proven to be a safe and effective method, when there is a complication of rupture leading to abscess.^[4] Uncomplicated cases of acute appendicitis should be treated with immediate appendectomy.^[4]

References

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